This Week in SP212E:1121/3321

Homework must be submitted stapled in assignment groupings.

Always attempt to complete the readings before class. You are responsible for reading 10 pages past the current lecture. You may not understand the material completely, but you should read it prior to lecture.

Problems to submit on the date listed :

**** STUDY the chapter summary before attempting the problems ****

FROM COURSE POLICY STATEMENT:

All multiple page assignments must be stapled. Your name and section number must be in an upper corner of the first page.

Week of 12 Jan

Fri:	21: P25, 29, 37

Week of 19 Jan

Mon:	!! Finish Lab Quiz 1 - Blackboard + 17 Mile Run,
Tues:	Complete SIMPLE CIRCUITS prelab prior to the lab period
	read and print lab instructions prior to lab - non-HTML version
Wed:	21: P42, 47, 48, 49
Fri:	21: P55, 59, 60

Q: question P: problem A: statement on this assignment sheet

Hints: 21.P42 What does x represent in the expression for the electric field due to a ring of charge ? Give a geometric interpretation of x. In class for the line of charge, I identified x as the distance from the middle of the line and $\sqrt{x^2 + (L/2)^2}$ as the distance form the end. Make an analogous identification for x in the expression for the field of the ring.

21.48 Can find E for points with x > 0, not with x = 0. Find the field at r_p = x i^; the source position is r_s = x' i^ Limits: - L < x' < 0. The limits must run from small value to large (more positive) value to make dx' > 0. You want to add up the contributions, not subtract them. Change of variable: u = x - x' du = - dx'. Recall r_p = x i^ is a fixed location on the positive x-axis. Hence x is constant during the integration. It is x' that varies running from - L to zero. Once the integral is completed, note the behavior in the limit x -> to zero.

21.P59 Simple Harmonic Motion about equilibrium occurs when a mass is subject to a linear restoring force. Find an expression for the force on the charge for points on the x-axis. Show that for small x, the force is of the form $F_x = - c x$. What is c in terms of Q, q, R and k (Coulomb's constant). Compare to the spring-mass oscillator for which T = 2 π Sqrt(m/k). What was k in this case ? What should you substitute for k to complete this problem ?

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Auxiliary Problems

A1